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ANALYSIS OF CROSSBREEDING ABILITY OF COTTON VARIETIES IN HYBRID SEEDLING TRIALS

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In 2024, crossbreeding experiments were conducted in a hybrid seedling field using high fiber yield and quality cotton varieties (Andijan-35, Andijan-37, SP-203, SP-204) and high oil content varieties (Namangan-77, C-8290, C-8295, C-8296). Crossbreeding was performed using the topcross method in 16 different combinations (Table 1).

Table 1: Crossbreeding Combinations Conducted in 2024 (F0)

No.	Crossbreeding Combinations	Number of Crossbreeds	Number of Hybrid Plants	Crossbreeding Ability (%)
1	Andijan-35 × Namangan-77	100	32	32
2	Andijan-37 × Namangan-77	100	34	34

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No.	Crossbreeding Combinations	Number of Crossbreeds	Number of Hybrid Plants	Crossbreeding Ability (%)
3	SP-203 × Namangan-77	100	38	38
4	SP-204 × Namangan-77	100	28	28
5	Andijan-35 × C-8290	100	36	36
6	Andijan-37 × C-8290	100	32	32
7	SP-203 × C-8290	100	30	30
8	SP-204 × C-8290	100	22	22
9	Andijan-35 × C-8295	100	20	20
10	Andijan-37 × C-8295	100	66	66
11	SP-203 × C-8295	100	44	44
12	SP-204 × C-8295	100	38	38
13	Andijan-35 × C-8296	100	20	20
14	Andijan-37 × C-8296	100	18	18

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No.	Crossbreeding Combinations	Number of Crossbreeds	Number of Hybrid Plants	Crossbreeding Ability (%)
15	SP-203 × C-8296	100	46	46
16	SP-204 × C-8296	100	30	30

Among the obtained combinations, the highest crossbreeding ability was observed in Andijan-37 × C-8295 (66%), while the other combinations ranged from 18% to 66%.

Growth Phases of F5 Hybrid Generations

Cotton seeds undergo several growth phases from germination to full development and seed production. The primary growth phases include:

1. Germination
2. First true leaf emergence
3. Bud formation
4. Flowering phase
5. Maturity

In our research, we studied the duration of growth phases in F5 hybrid generations obtained from the following combinations:

- (Andijan-36 × Omad)
- (Andijan-35 × Ibrat)
- (C-8290 × Namangan-77)
- (SP-204 × Andijan-37)

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In our experiment, cotton seeds germinated within 8-10 days. The seeds of F5 (Andijan-36 × Omad) germinated within 8 days, while other hybrid generations germinated slightly later. Specifically, F5 (Andijan-35 × Ibrat) germinated in 9 days, and F5 (C-8290 × Namangan-77) and F5 (SP-204 × Andijan-37) germinated in 10 days.

The bud formation phase was observed as follows:

- Andijan-36 variety: 34 days
- F5 (Andijan-36 × Omad): 29 days (5 days earlier)
- F5 (Andijan-35 × Ibrat): 30 days (4 days earlier)
- F5 (C-8290 × Namangan-77): 31 days (3 days earlier)
- F5 (SP-204 × Andijan-37): 31 days (3 days earlier)

The flowering phase lasted between 54-57 days. Compared to Andijan-36, the F5 (Andijan-35 × Omad) hybrid bloomed 5 days earlier, while other hybrids also transitioned to this phase sooner:

- F5 (Andijan-35 × Ibrat): 4 days earlier
- F5 (C-8290 × Namangan-77): 3 days earlier
- F5 (SP-204 × Andijan-37): 2 days earlier

The maturity phase was observed when 50% of plants in a row had fully matured. The total growth cycle in Andijan-36 lasted 121 days, while F5 hybrid generations matured 6-9 days earlier:

- F5 (SP-204 × Andijan-37): 9 days earlier
- F5 (Andijan-35 × Omad): 8 days earlier
- F5 (Andijan-35 × Ibrat): 7 days earlier
- F5 (C-8290 × Namangan-77): 6 days earlier

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